

## ABSTRACT

A method of manufacturing a potassium niobate ( $\text{KNbO}_3$ ) single crystal thin film, includes the steps of maintaining the substrate under a predetermined oxygen partial pressure; maintaining the substrate within a temperature region which is equal to or higher than an eutectic temperature of  $\text{KNbO}_3$  and  $3\text{K}_2\text{O}\cdot\text{Nb}_2\text{O}_5$  and is equal to or lower than complete melting temperature of  $\text{KNbO}_3$  and  $3\text{K}_2\text{O}\cdot\text{Nb}_2\text{O}_5$  so that a solid phase of  $\text{KNbO}_3$  and a liquid phase can coexist on the substrate; depositing a vapor phase material on the substrate in a state in which a solid phase and a liquid phase coexist; and precipitating  $\text{KNbO}_3$  on the substrate from the liquid phase as a solid phase to grow a  $\text{KNbO}_3$  single crystal thin film. The composition of a starting material to be vaporized to generate the vapor phase material is from  $\text{K}_2\text{O}\cdot\text{Nb}_2\text{O}_5=50:50$  to  $\text{K}_2\text{O}\cdot\text{Nb}_2\text{O}_5=65:35$ .